

WHAT IS CLAIMED IS:

1. A method of measuring the quality of a circuit-switched service transmitted on a traffic channel between a transmitter and a receiver in a cellular radio network, comprising:

the transmitter transmits user data to the receiver using data frames of the traffic channel;

the transmitter does not transmit all data frames of the traffic channel to the receiver because the user data are missing;

the transmitter transmits control data to the receiver using associated control channels of the traffic channel;

the transmitter calculates the number of frames transmitted to the receiver on the traffic channel during a certain period;

the receiver calculates the number of all frames received and decoded correctly during a certain period; and

a quality value is calculated for a service to be transmitted on the traffic channel during a certain period by subtracting the number of frames transmitted during said period from the number of frames received during said period and by dividing the difference obtained by the number of frames transmitted during said period.

2. A method according to claim 1, wherein the transmitter transmits silence descriptor frames in place of some data frames, if the user data are missing.

3. A method according to claim 2, wherein comfort noise is inserted into the silence descriptor frame, if the service is a speech transmission service.

4. A method according to claim 2, wherein predetermined data are inserted into the silence descriptor frame, if the service is a data transmission service.

5. A method according to claim 1, wherein
the transmitter is in the network part of the cellular radio network and the receiver is in a subscriber terminal;

the receiver signals the number of all frames received on the traffic channel and decoded correctly to the transmitter; and
the quality value is calculated for a downlink in the network part.

6. A method according to claim 5, wherein signalling of the number of received frames replaces a bit error ratio estimate, such as parameter RX_QUAL_SUB, which is calculated by the receiver from some received frames and is to be signalled to the transmitter.

7. A method according to claim 5, wherein signalling of the number of received frames replaces a bit error ratio estimate, such as parameter RX_QUAL_FULL, which is calculated by the receiver from all received frames and is to be signalled to the transmitter.

8. A method according to claim 6, wherein the bit error ratio estimate to be signalled to the transmitter is replaced with a bit error probability, such as parameter BEP_MEAN, which is calculated from the frames received by the receiver.

9. A method according to claim 6, wherein the bit error ratio estimate or bit error probability to be signalled to the transmitter is calculated only from correctly decoded frames.

10. A method according to claim 1, wherein
the transmitter is in a subscriber terminal and the receiver in the network part of the cellular radio network;
the transmitter signals the number of all frames transmitted on the traffic channel to the receiver; and
the quality value for an uplink is calculated in the network part.

11. A method according to claim 1, wherein the calculated quality value is used for controlling power control of the traffic channel and/or handover and/or link adaptation and/or optimization of the cellular radio network function.

12. A cellular radio network comprising a transmitter and a receiver, which communicates with the transmitter over a traffic channel on which a circuit-switched service is transmitted and which consists of data frames and associated control channel frames;

the transmitter comprising means for transmitting user data to the receiver using data frames of the traffic channel;

the transmitter comprising means for not transmitting all data frames of the traffic channel to the receiver when the user data are missing;

the transmitter comprising means for transmitting control data to the receiver using associated control channel frames of the traffic channel;

the transmitter comprises means for calculating the number of all frames transmitted to the receiver on the traffic channel during a certain period;

the receiver comprises means for calculating the number of all frames received on the traffic channel and decoded correctly during a certain period; and

the cellular radio network comprises means for calculating a quality value for a service to be transmitted on the traffic channel during a certain period by subtracting the number of frames transmitted during said period from the number of frames received during said period, and by dividing the difference obtained by the number of frames transmitted during said period.

13. A cellular radio network according to claim 12, wherein the transmitter transmits silence descriptor frames in place of some data frames, if the user data are missing.

14. A cellular radio network according to claim 13, wherein comfort noise is inserted into the silence descriptor frame, if the service is a speech transmission service.

15. A cellular radio network according to claim 13, wherein pre-terminated data are inserted into the silence descriptor frame, if the service is a data transmission service.

16. A cellular radio network according to claim 12, wherein
the transmitter is in the network part of the cellular radio network
and the receiver in a subscriber terminal;
the receiver comprises means for signalling the number of all
frames received on the traffic channel and decoded correctly to the transmitter;
and
the means for calculating the quality value are in the network part.

17. A cellular radio network according to claim 16, wherein the signalling of the number of received frames replaces a bit error ratio estimate, such as parameter RX_QUAL_SUB, which is calculated by the receiver from some received frames and is to be signalled to the transmitter.

18. A cellular radio network according to claim 16, wherein signalling of the number of received frames replaces a bit error ratio estimate, such as parameter RX_QUAL_FULL, which is calculated by the receiver from all received frames and is to be signalled to the transmitter.

19. A cellular radio network according to claim 17, wherein the a bit error ratio estimate to be signalled to the transmitter is replaced with bit error probability, such as parameter BEP_MEAN, which is calculated from the frames received by the receiver.

20. A cellular radio network according to claim 17, wherein the bit error ratio estimate or bit error probability to be signalled to the transmitter is calculated only from correctly decoded frames.

21. A cellular radio network according to claim 12, wherein
the transmitter is in a subscriber terminal and the receiver in the network part of the cellular radio network;
the transmitter comprises means for signalling the number of all frames transmitted to the receiver on the traffic channel; and
the means for calculating the quality value are in the network part.

22. A cellular radio network according to claim 12, wherein the calculated quality value is used for controlling power control of the traffic channel

and/or handover and/or link adaptation and/or optimization of the cellular radio network function.

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